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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/602,714 | 06/25/2003 | Ramam Akkipeddi | 4249-0110P | 9942 |
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| BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747 | | | EXAMINER AHMED, SHAMIM | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1765 | |

DATE MAILED: 09/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/602,714

Applicant(s)

AKKIPEDDI ET AL.

Examiner

Shamim Ahmed

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1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-18, drawn to a process, classified in class 216, subclass 65.
 - II. Claim 19, drawn to a product, classified in class 372, subclass 43.01.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made by different process such as cutting by saw blade or by dry etching.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Robert Goozner on 9/9/05 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-18. Affirmation of this election must be made by applicant in replying to this Office action. Claim 19 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

6. The abstract of the disclosure is objected to because the abstract is not in proper form such as it should be in a single paragraph. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-7, 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Ota et al (6,411,636).

Ota et al disclose a process of fabricating a cleaved facet of a nitride semiconductor laser device, wherein the process including the steps of growing a group

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III nitride layer such GaN layer on a C-face of a sapphire substrate having thickness of about 100 μm (col.4, lines 9-36).

Ota et al also disclose that cleavage is performed by forming scribing lines or linear grooves in the vertical planes or a-planes ((11-20) plane) of the substrate (col.4, lines 45-55).

Ota et al teach that scribing lines are formed by irradiating the substrate with laser beam with sufficient energy in order to form grooves at predetermined depth and length (col.8, lines 19-39).

Ota et al also teach that the sapphire substrate is then cleaved in the direction shown in figure 12 by using the grooves (G) as a starting point (col.8, lines 41-44).

As to claim 7, Ota et al teach that the sapphire substrate can be cleaved at a thickness of 250 to 350 μm (col.5, lines 3-5).

As to claims 16-18, Ota et al teach that a plurality of GaN-based layers including GaN, InGaN and AlGaIn are formed on the substrate (col.5, lines 29-35).

9. Claims 1-6 and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by anticipated by Cervantes et al (6,379,985).

Cervantes et al disclose a process of fabricating a cleaved facet of a nitride semiconductor laser device, wherein the process including the steps of growing a group III nitride layer such GaN layer on a C-face of a sapphire substrate having thickness of about 100 μm to 200 μm (col.3, lines 39-67).

Cervantes et al also disclose that a line of weakness (68,70) on the substrate in which cleavage is performed (col.4, lines 16-39).

Cervantes et al teach that suitable technique for weakening the bottom c-face of the sapphire substrate in the a-plane direction is laser ablation in order to form a narrow groove or trench, wherein the depth of the grooves or trench having several tens of microns (col.5, lines 1-25).

As to claims 16-18, Cervantes et al teach that a plurality of GaN-based layers including GaN, InGaN and AlGaIn are formed on the substrate (col.7, lines 33-38).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 8-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ota et al (6,411,636).

Ota et al disclose above in the paragraph 8 but remain silent regarding the specific power range and density of the laser beam applied during the cutting or groove-forming step.

However, Ota et al teach that energy density and the duration of the irradiation using the laser beam is monitored and controlled during the cutting or forming the groove G at a predetermined depth and length and irradiation with laser beam or scribing can be repeatedly perform in accordance with the pitch of the device length of the nitride semiconductor laser (col.8, lines 23-39).

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of claimed invention to optimize the laser ablation parameters, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As to claim 8, Ota et al teach the grooves having a micron-order curvature governs cleavability (col.9, lines 1-3), which broadly reads on the claimed range.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Morita (US 2002/0081800) and Kobayashi et al (6,482,666) discloses process of cleaving a sapphire substrate with GaN layer by forming scribing lines or cleavage assist grooves.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (571) 272-1457. The examiner can normally be reached on M-Thu (7:00-5:30) Every Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G. Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shamim Ahmed
Primary Examiner
Art Unit 1765

SA
September 10, 2005